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ABSTRACT

Spiders are predatory arthropods that usually prey upon a range of animals from invertebrates to vertebrates across the animal kingdom. Although the majority prey base is primarily insects, there are rare cases where spiders are encountered feeding upon vertebrate prey like frogs, birds, rodents and a few small reptiles. Here the natural history observation accounts for the predation of a skink by a ground-dwelling Wolf Spider on the forest floor.

Keywords: Wolf spider, predation, Skink, Odisha

1. INTRODUCTION

The animal world is full of mysteries and surprises in general, and perhaps they are unbeatable when it comes to behaviour. Feeding behaviour and choice of prey has been widely studied globally and has always intrigued ecologists who look at the prey choice pattern in different animal taxa. The obvious inclination has mostly been towards the larger animals and most vertebrates when it comes to prey and predator ecology. However, the feeding pattern in many invertebrate taxa also has fascinating storylines. Also, vertebrates being preyed upon by invertebrates though less reported and under-explored, are not rare in occurrence (Reyes-Olivares, 2020).

Most studies on prey-predator interactions involving invertebrates that consume vertebrates have been conducted in terrestrial settings (Jedrzejewska and Jedrzejewski, 2013). However, Rubbo *et al.* (2001) had found that in many instances, there is intra-guild predation occurring, and as a result of this predatory interaction, a wide variety of arthropods, including chilopods, crustaceans, arachnids, and insects, feed on small vertebrates (McCormick and Polis, 1982; Valdez, 2020).

Spiders are hugely predacious and mainly prey upon insects, mostly plant or crop pests (Sunderland, 1999). However, their elaborate and predominant predatory behaviour allows them to occupy various niches covering a wide range of prey (Wise, 1993). These arachnids usually capture more prey than they need for daily consumption (Nyffeler *et al.*, 1994). It was also reported by Riechert and Lockley (1984) that spiders could capture and kill around 50 times more prey than what it consumes. However, considering their varied habitat, spiders have been reported to feed upon various taxa of vertebrates. According to Nordberg *et al.* (2018), spiders are some of the most significant

vertebrate predators on the planet. Various researchers report the feeding behaviour of spiders on different taxa like Nyffeler and Pusey (2014) report spiders feeding on a range of animals including fish, anurans prey was reported by Nyffeler and Altig (2020), lizards (O'Shea and Kelly, 2017; Ranade, 2015), skinks (O'Shea and Kelly, 2017), snakes (Jorge *et al.*, 2016), birds (Brooks, 2012) and medium-sized mammal predation was also reported by Nyffeler and Knörnschild (2013).

Spiders have several characteristics that enable them, including strong fangs, to devour such a broad array of vertebrates, including penetrating the vertebrate skin and injecting paralyzing toxins (Foelix, 2011; Garb and Hayashi, 2013). Spiders also have a generalist prey choice (Riechert and Harp, 1987) and several hunting tactics, including active feeding, ambush predation and stalking (Willemart and Lacava, 2017) strategies along with the ability of web-building to catch prey (Foelix, 2011). Together with a larger body size than some vertebrate species, these features make spiders capable of capturing a range of vertebrate taxa (McCormick and Polis, 1982). According to Reyes-Olivares (2020), the size of spiders and lizards in cases where interactions have been recorded also plays an important role. On many occasions, spiders are smaller than their prey. Despite this wealth of information on arthropods that prey on vertebrates, the subject has remained largely ignored and, as a result, underappreciated (Nordberg *et al.*, 2018).

Reyes-Olivares, (2020), reported the predation of reptilians by spiders in the Neotropical region. Although eight different families of spiders were reported to predate on lizards, the most commonly reported were families Ctenidae and Theraphosidae. This work also does not mention any predation about skinks from family Scincidae. Although spider predation on vertebrates has been observed in India, it has mostly been reported on frogs (Das *et al.*, 2021), lizards (Rade, 2015), and bats (Ramachandran *et al.*, 2015).

Some families of the spiders of suborder Araneomorphae which prey on lizards are namely, Araneidae (orb-weaver spiders), Lycosidae (wolf spiders), Ctenidae (wandering spiders), Sicariidae (six-eyed spiders), Salticidae (jumping spiders), Trechaleidae (trechaleid spiders) and Sparassidae (huntsman spiders) as reported by Reyes-Olivares, 2020). According to Khan and Misra (2009), the family Lycosidae has been found to prey on leafhoppers, lizards, salamanders (Crane and Mathis, 2015).

2. METHODOLOGY

The present observation was recorded on 27 August 2018 at around 11:30 Hrs during the Forest Work Experience conducted by the College of Forestry, OUAT, Bhubaneswar, Odisha in the Devagiri Range Parlakhemundi Forest Division, Gajapati Dist., Odisha, India (18.7785850 N, 84.1127210 E).

3. RESULTS & DISCUSSION

The habitat consists of *Acalypha indica*, *Commelina benghalensis*, *Commelina erecta*, *Cajanus scarabaeoides* and *Phyllanthus urinaria* species. It was observed that a *Hogna* sp. (Lycosidae) spider was hiding inside the leaves on the floor when the skink, *Eutropis* sp. passed by and the spider instantly grabbed it by its skull and pierced the fangs in there. Unfortunately, the total predation was not captured as it dragged the prey into the bush and disturbing the animal in its natural habitat was avoided. The digital images were taken with a Nikon D3400 DSLR and Lenovo K8 Note camera. Lycosidae or wolf spiders are wandering spiders who do not build webs to capture prey but hunt them by running and stalking (Foelix, 2011). The natural history observation becomes further interesting since the members of Scincidae are extremely fast on the ground and slither away in no time. Like many authors suggest the size factor to be important in prey selection, it is also worth mentioning that the spiders in the *Hogna* genus are relatively larger than other genera in the Lycosidae family. Mostly the other Lycosids are not found preying on very large vertebrate prey as compared to their size.

Intraguild predation is likely to occur among organisms that share common resources. As Lycosidae spiders are generalist predators and predominantly ground hunters, they are likely to prey on animals they find are not threatening and easily available around them. However, the skink exhibits typical escape behaviour trying to elude the predator as it feigns to death (i.e., lay immobile). Therefore, the chances of predation decreases, but when the skink gets back into motion the spider attacks for predation (Rubbo *et al.*, 2001).



Figure 1. The Lycosid preying upon skink in its habitat

Though not seen very commonly encountered yet, the above-documented behaviour may not be extremely rare in occurrence as there have been cases of *Araenomoprh* spiders predating on vertebrate species. This is probably the first record of such predation cases involving a skink in the case of *Lycosidae* spiders, as they have already been documented to have been preyed upon by *Theridiidae* spiders in the past. The forest floors in India have many such prey-predator stories hidden beneath them that are less explored. The members of the wolf spider family live a very inconspicuous life as they are mostly nocturnal, camouflaged on the forest floor and predate by stalking their prey with the advantage of their very powerful vision. This particular record is proof of their lightning-speed attack on their prey for which they are known and prowess to bring down larger prey than them. Such incidents add to our definite knowledge of the scope of prey choice in spiders and their varying role as biological control agents in specific food chains like that involving the forest litter.

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Ethical approval

Proper field approval obtained from Devagiri Range Parlakhemundi Forest Division, Gajapati Dist., Odisha, India.

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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